

GENERAL DESIGN GUIDELINES

PAGE 18-1

- 1 SITUATION PLAN
- 2 ROAD PROFILE
- 3 CROSS SECTION
- 4 SOIL BORING INFORMATION
- 5 HYDRAULIC DATA

PAGE 18-2

- 1 LONGITUDINAL CROSS SECTION
- 2 CROSS SECTION - WITH EXCAVATION AND BACKFILL DETAILS
- 3 CULVERT WRAP DETAIL
- 4 NOTES AND QUANTITIES

PAGE 18-3

- 1 CONCRETE TABLE
- 2 STEEL TABLE
- 3 END DETAILS

SECTION 17  
T37N,R26W  
VILLAGE OF CARNEY

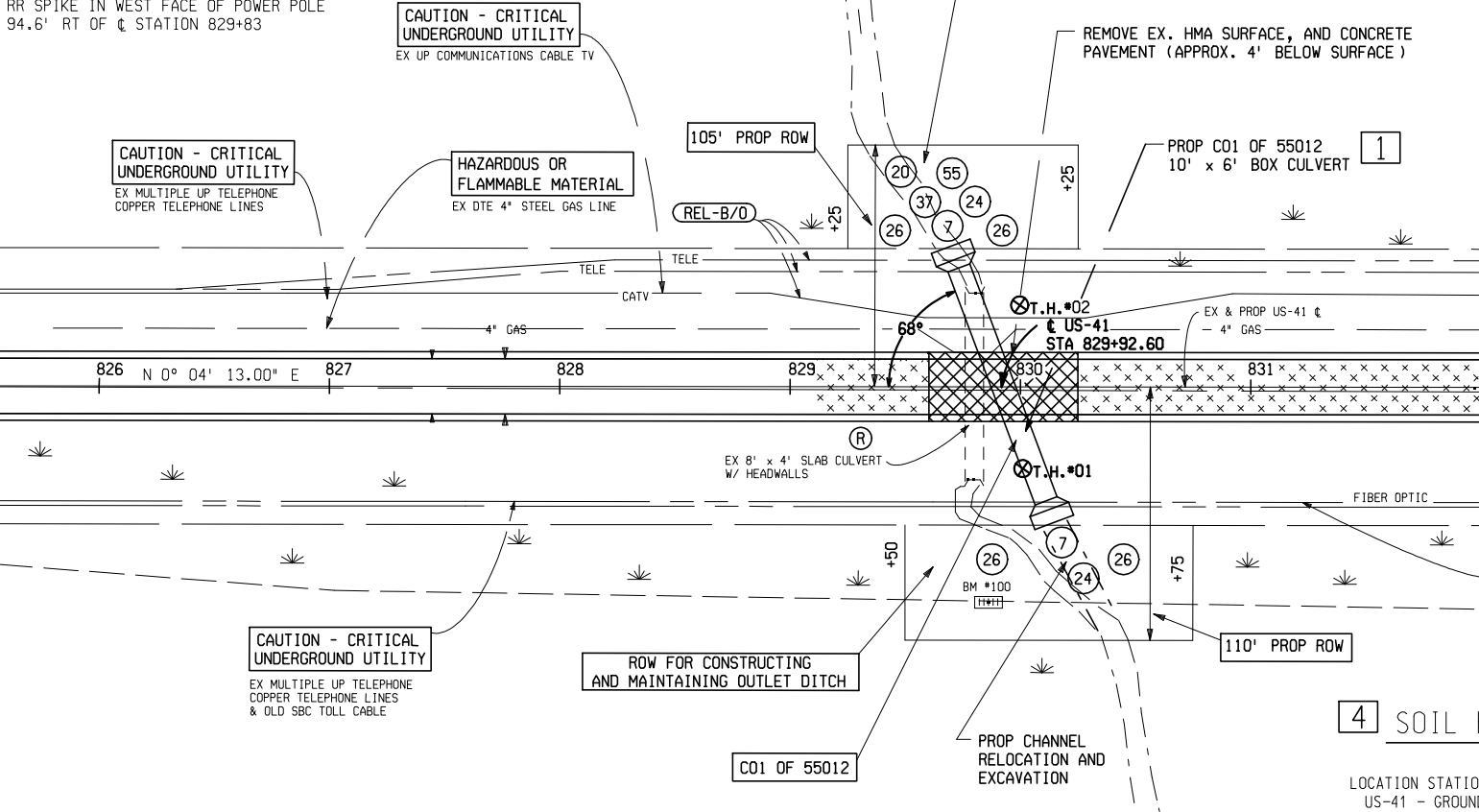
CONTRACTOR TO FIELD VERIFY  
ALL UTILITY LOCATION AND DEPTHS

B.M.#101 ELEV. 797.78

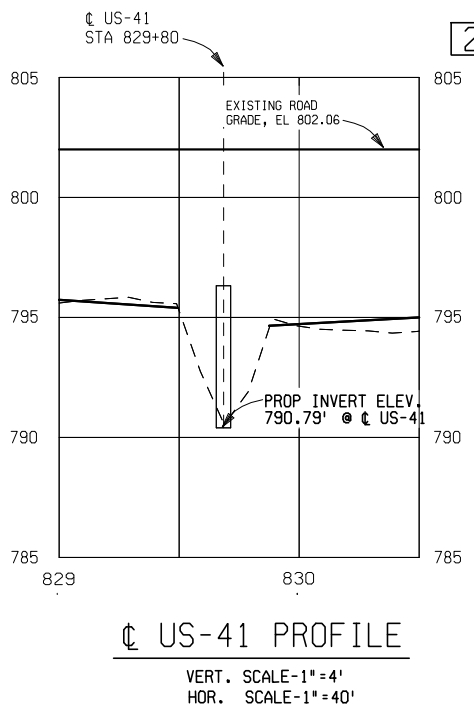
RR SPIKE IN WEST FACE OF POWER POLE  
95.0' RT OF  $\phi$  STATION 832+75

B.M.#100 ELEV. 796.11

RR SPIKE IN WEST FACE OF POWER POLE  
94.6' RT OF  $\phi$  STATION 829+83



SITUATION PLAN  
NOT TO SCALE



SECTION 18  
T37N,R26W  
VILLAGE OF CARNEY

SOIL EROSION AND  
SEDIMENTATION CONTROL ITEMS

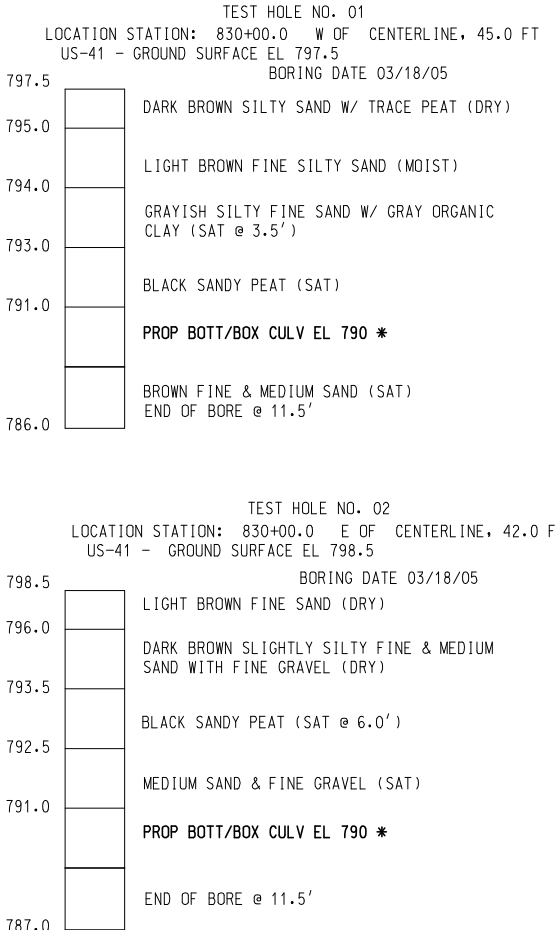
- 7 SPECIAL RIPRAP W/GEOTEXTILE LINER
- 26 SILT FENCE
- 24 SAND BAGS
- 20 SEDIMENT TRAP
- 37 CHECK DAM
- 55 FILTER BAG

THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION PLAN, FOR DEWATERING AND MAINTAINING STREAM FLOW, TO THE ENGINEER AT LEAST 14 DAYS PRIOR TO BEGINNING THE WORK. THE PLAN MUST BE APPROVED PRIOR TO PERFORMING ANY WORK ON THE CULVERT. PAYMENT FOR ALL ITEMS USED FOR DEWATERING AND MAINTAINING FLOW DURING CONSTRUCTION SHALL BE INCLUDED IN THE PAYMENT FOR THE CULVERT. OTHER SEDIMENTATION AND EROSION CONTROL ITEMS WILL BE PAID FOR SEPARATELY AS INDICATED IN THE MISCELLANEOUS QUANTITIES.

RIPRAP, SILT FENCE, STONE BAGS, SEDIMENT TRAP, AND CHECK DAM SHALL BE PLACED AS DIRECTED BY THE ENGINEER.

UPON CONSTRUCTION OF CULVERT END SECTIONS, THE CONTRACTOR SHALL IMMEDIATELY INSTALL SILT FENCE IN EACH QUADRANT OF THE CULVERT. AT THE END OF EACH WORK DAY, SILT FENCE MUST BE INSTALLED AT ALL QUADRANTS HAVING EARTH DISTURBANCES.

4 SOIL BORING INFORMATION

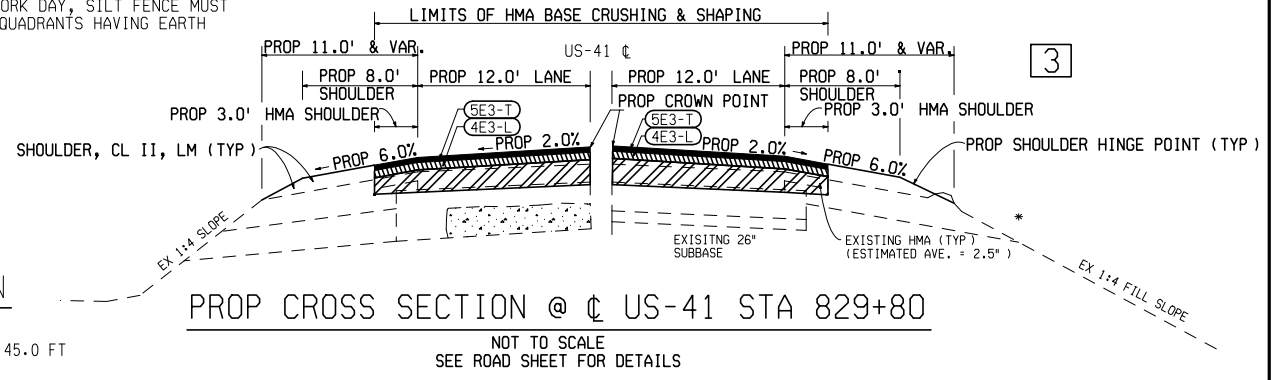


HYDRAULIC INFORMATION

DRAINAGE AREA = 2.6 sqm  
DISCHARGE 50 YEAR = 130 cfs  
DISCHARGE 100 YEAR = 170 cfs

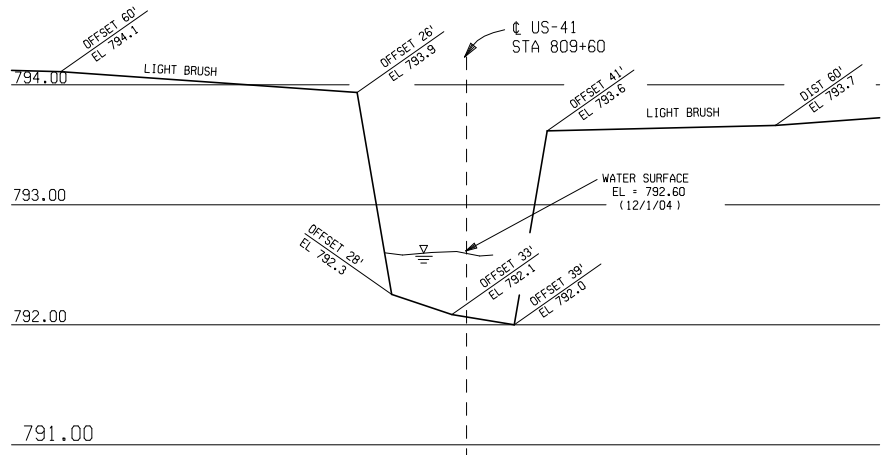
	EXISTING	PROPOSED	CHANGE
CULVERT TYPE	Concrete Slab	Concrete Box	CULVERT TYPE
SPAN	8 ft	10 ft	2 ft
RISE	4 ft	6 ft	2 ft
LENGTH	82 ft	108 ft	26 ft
ENTRANCE TYPE	Sq. Headwall	Wingwall	
U/S INVERT EL	N/A	790.80 ft	
D/S INVERT EL	N/A	790.78 ft	
50-YEAR VELOCITY AT OUTLET HEADWATER	6.8 ft/s 796.25 ft	7.0 ft/s 795.52 ft	-0.73 ft
100-YEAR VELOCITY AT OUTLET HEADWATER	7.7 ft/s 796.48 ft	7.8 ft/s 796.06 ft	- 0.42 ft
	Ke = 0.5	Ke = 0.4	

50-YEAR AND 100-YEAR ELEVATIONS ARE FOR COMPARISON ONLY



PROP CROSS SECTION @  $\phi$  US-41 STA 829+80

NOT TO SCALE  
SEE ROAD SHEET FOR DETAILS



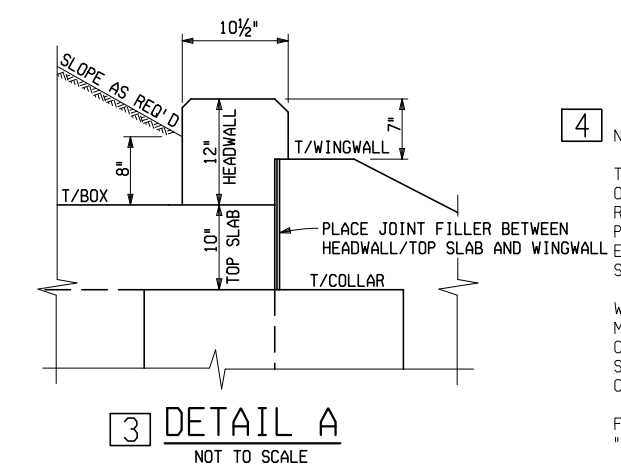
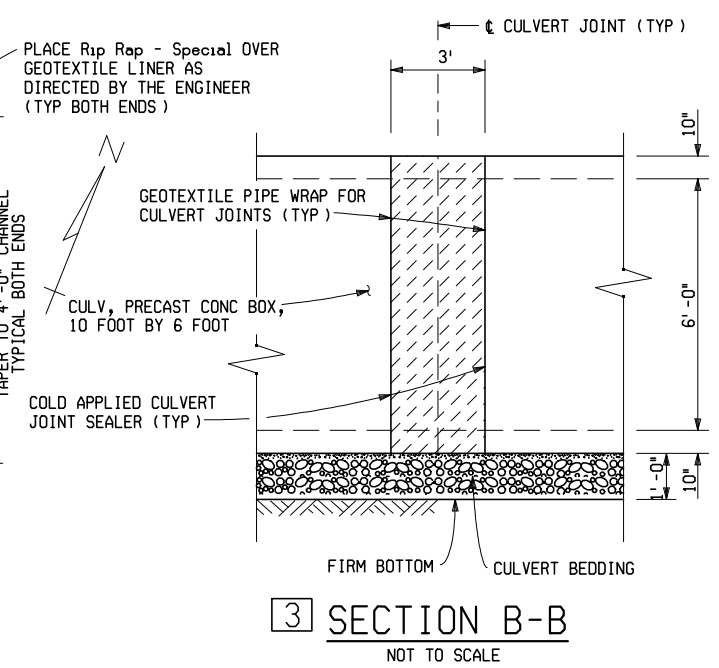
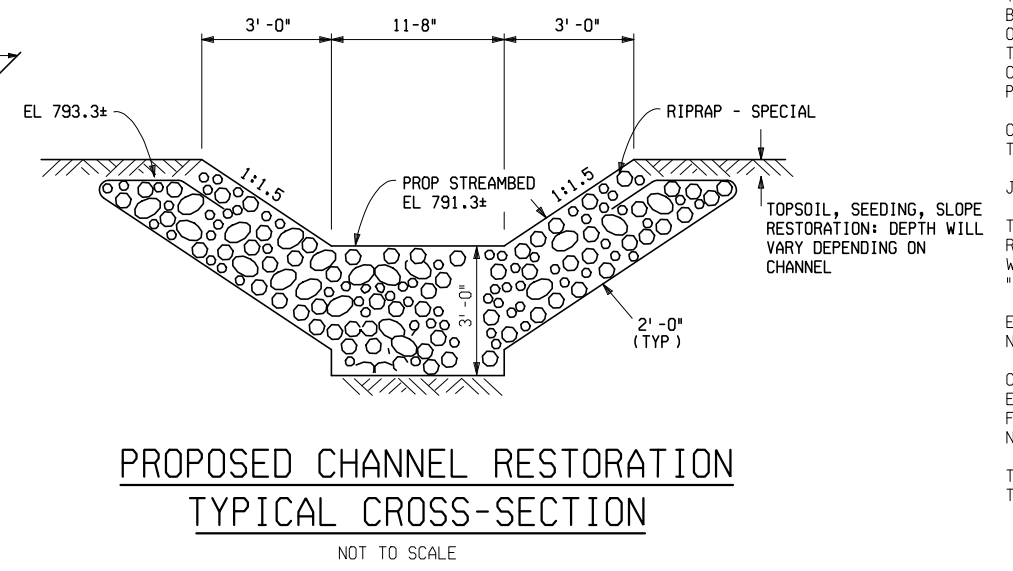
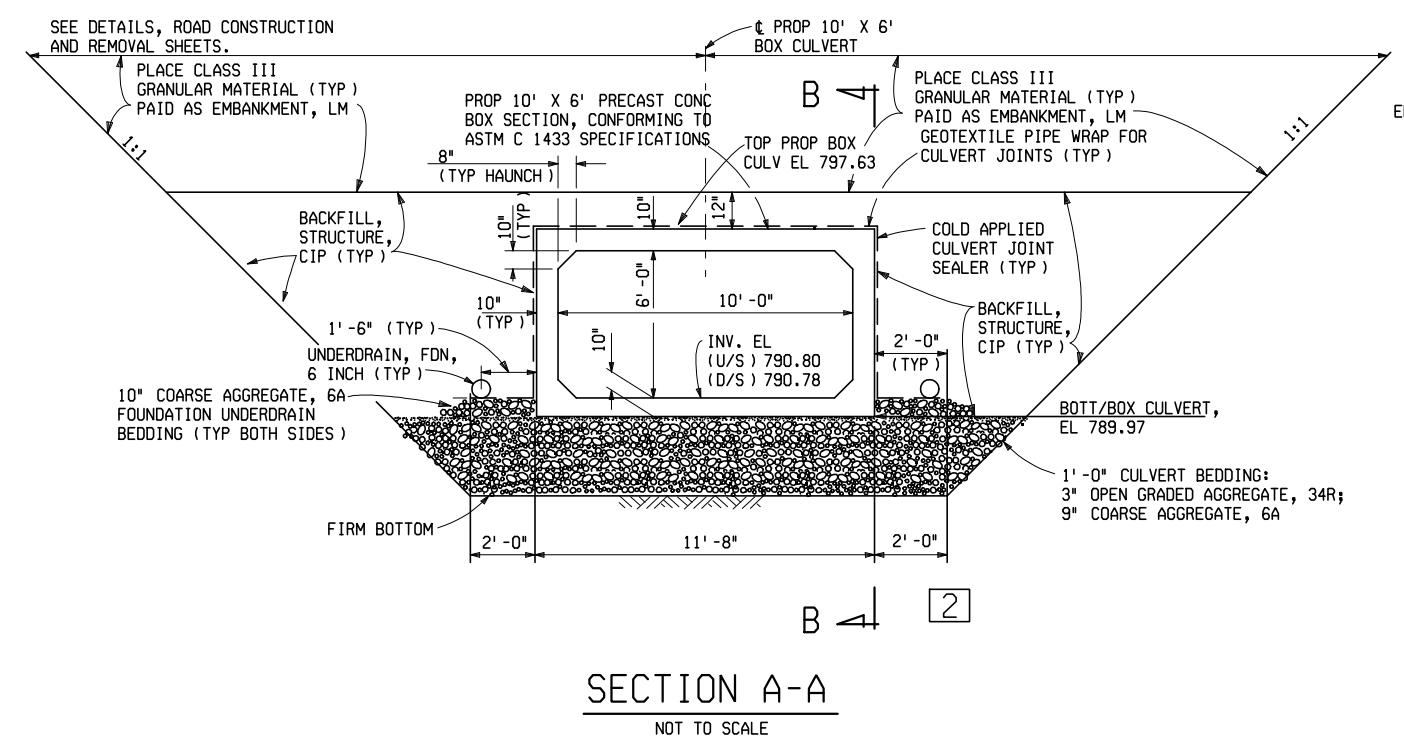
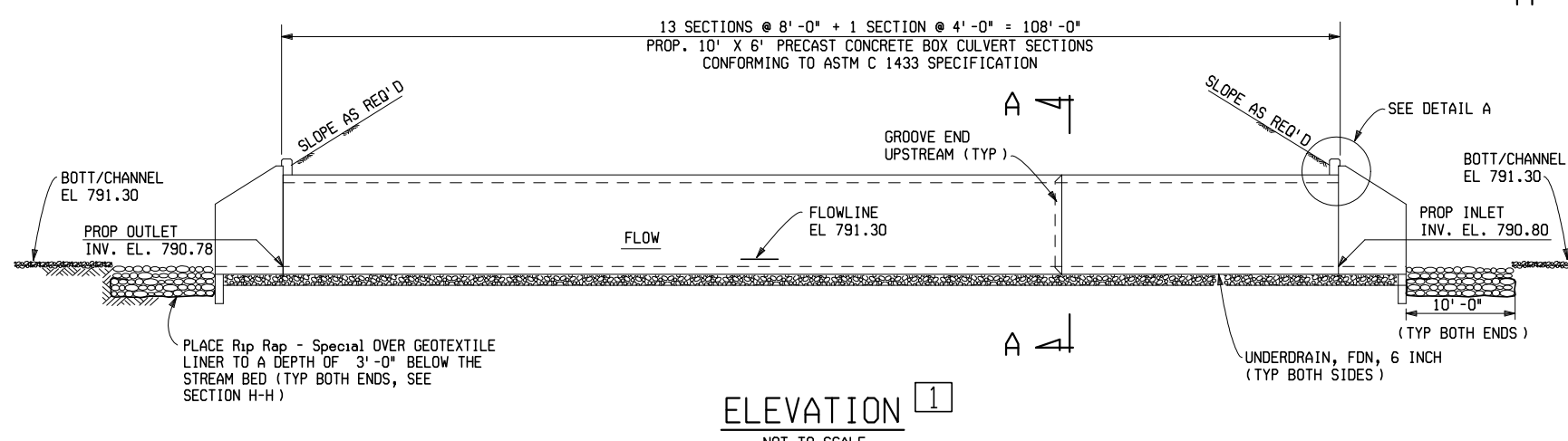
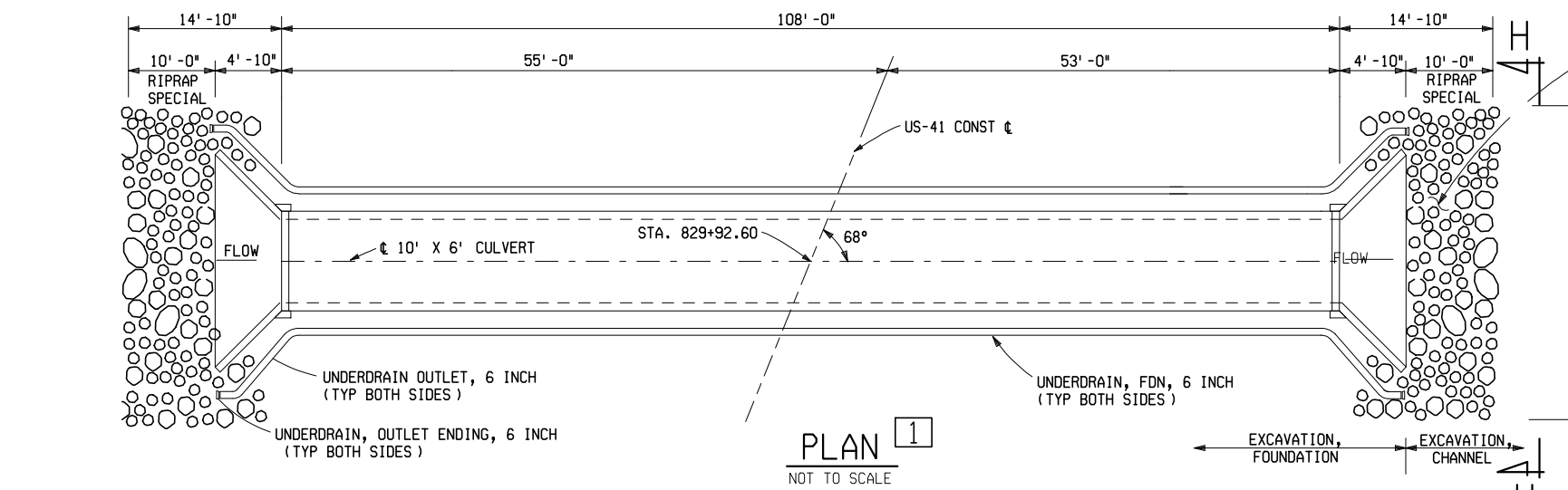
CHANNEL CROSS-SECTION

50.0' DOWNSTREAM FROM EXISTING HEADWALL  
VERT. SCALE-1"=1'  
HOR. SCALE-1"=10'

10' X 6' BOX CULVERT

18-1

	US-41 STA 829+92.60			
	DATE 12/11/03	CONT. SEC. 55012	JOB NO. 80177A	DESIGN UNIT URDA
			SHEET NO. R.O.W/CONST.	FILE NAME:



FOR INFORMATION ONLY	
1200 Sft	Geotextile Pipe Wrap for Culvert Joints
1200 Sft	Cold Applied Culvert Joint Sealer
72 Cyd	Coarse Aggregate 6A (CULV BEDDING)
19 Cyd	Open Graded Aggregate, 34R (CULV BEDDING)
24 Sft	1 inch Joint Filler
72 Ea	Inserts for 3/4" Dia Threaded Bars

MISCELLANEOUS QUANTITIES	
1 LS	Structures, Rem
108 Ft	Culv, Precast Conc Box, 10 foot by 6 foot
91 Cyd	Culv Bedding, Box Culv
380 Cyd	Excavation, Fdn
65 Cyd	Excavation, Channel
320 Cyd	Excavation, Peat
670 Cyd	Backfill, Structure, CIP
100 Cyd	Embankment, LM
216 Ft	Underdrain, Fdn, 6 inch
28 Ft	Underdrain Outlet, 6 inch
4 Ea	Underdrain, Outlet Ending, 6 inch
210 Sft	Joint Waterproofing
16 Cyd	Conc, Grade S2
1557 Lb	Reinforcement, Steel, Epoxy Coated
60 Syd	Riprap-Special
400 Ft	Erosion Control, Silt Fence
400 Ea	Erosion Control, Sand Bags
30 Ft	Erosion Control, Check Dam, Stone
1 Ea	Erosion Control, Filter Bag
1 Ea	Erosion Control, Sediment Trap
50 Cyd	Erosion Control, Maintenance, Sediment Removal

4 NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, DEWATERING AND MAINTAINING FLOW, REMOVAL OF EXISTING 10' X 6' CULVERT AND HEADWALLS, INSTALLATION OF THE PROPOSED PRECAST CONCRETE BOX CULVERT, CONSTRUCTION OF THE CAST-IN-PLACE END SECTIONS, CHANNEL RELOCATION, PLACING GEOTEXTILE LINER AND RIPRAP, SLOPE RESTORATION, AND OTHER ITEMS NECESSARY TO COMPLETE THE WORK AS SHOWN.

WATER LEVEL IS SUBJECT TO CHANGE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION OF WATER LEVELS THAT WILL EXIST DURING CONSTRUCTION. DEWATERING AND MAINTAINING FLOW WILL NOT BE PAID FOR SEPARATELY, BUT WILL BE INCLUDED IN THE COST PER FOOT OF "Culv, Precast Conc Box, 10 foot by 6 foot."

FURNISHING AND PLACING THE GEOTEXTILE LINER IS INCLUDED IN THE COST FOR "Riprap-Special."

THE ENTIRE AREA OF EXCAVATION AROUND THE CULVERT SHALL BE BACKFILLED WITH STRUCTURE BACKFILL. THE PAY AREA SHALL START AT THE TOP OF CULVERT BEDDING AND EXTEND TO ONE FOOT ABOVE THE LEVEL OF THE TOP OF THE BOX CULVERT. THE AGGREGATE 6A CULVERT BEDDING SHALL BE 100 PERCENT CRUSHED. EMBANKMENT SHALL BE PLACED ABOVE THE STRUCTURE BACKFILL TO PROPOSED GRADE OR PROPOSED AGGREGATE BASE.

CULVERT BEDDING SHALL BE PLACED BELOW THE APRON DOWN TO THE BOTTOM OF THE EXCAVATION.

JOINT FILLER IS INCLUDED IN THE PAY ITEM "Conc, Grade S2."

THREADED BARS SHALL BE INSERTED IN DAYTON SUPERIOR 3/4" DIA. TYPE B-16, RICHMOND 3/4" DIA. TYPE L, OR EQUAL. "Inserts for 3/4" Dia Threaded Bars" WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PAY ITEM "Culv, Precast Conc Box, 10 foot by 6 foot."

EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 3/4" MINIMUM, EXCEPT WHERE NOTED.

CIP DENOTES CAST-IN-PLACE OR COMPACTED-IN-PLACE.  
ES DENOTES EACH SIDE.  
FS DENOTES FAR SIDE.  
NS DENOTES NEAR SIDE.

THE GRADES AND STRESSES OF CONCRETE AND STEEL REINFORCEMENT USED IN THIS CULVERT EXTENSION SHALL BE AS FOLLOWS:

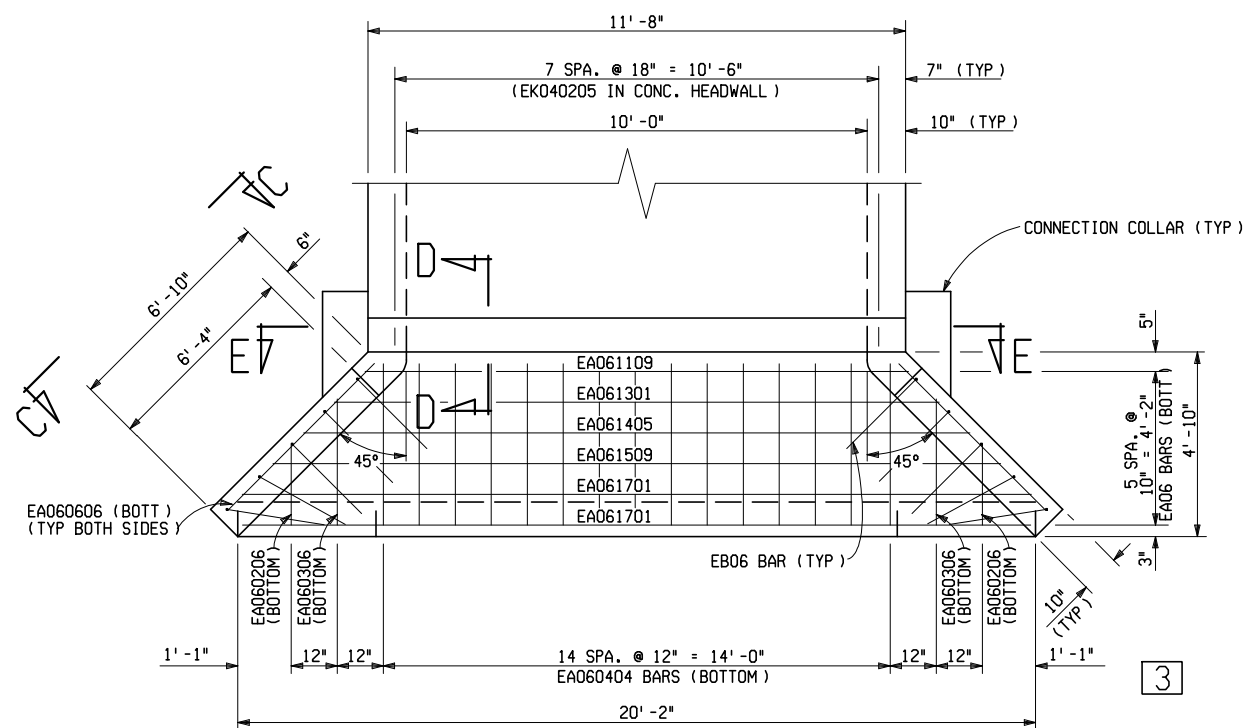
STEEL REINFORCEMENT (GRADE 60) . . . . .  $f_y = 60,000$  psi  
CONCRETE GRADE S2 . . . . .  $f'_c = 3,500$  psi

DAMAGE TO THE STEEL REINFORCEMENT EPOXY COATING SHALL BE REPAIRED ACCORDING TO SUBSECTION 706.03.E.8.

THE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2003 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

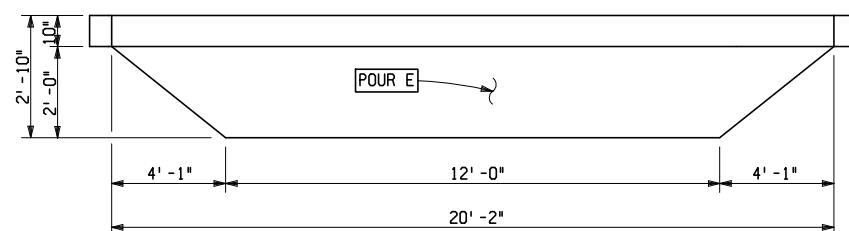
10' X 6' BOX CULVERT DETAILS 18-2

			FINAL R.O.W.
AUTH	DATE	NO.	REVISION



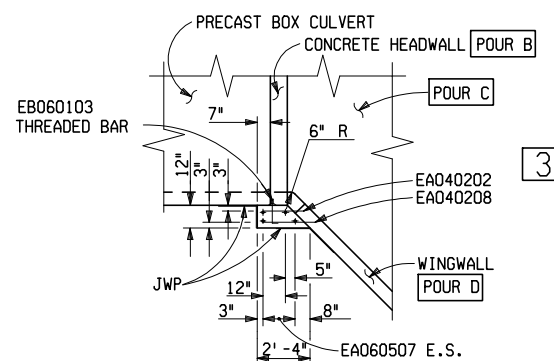
### PLAN OF WINGWALL & APRON

NOT TO SCALE



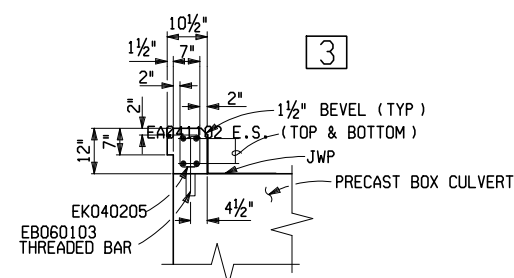
CURTAINWALL ELEVATION

NOT TO SCALE



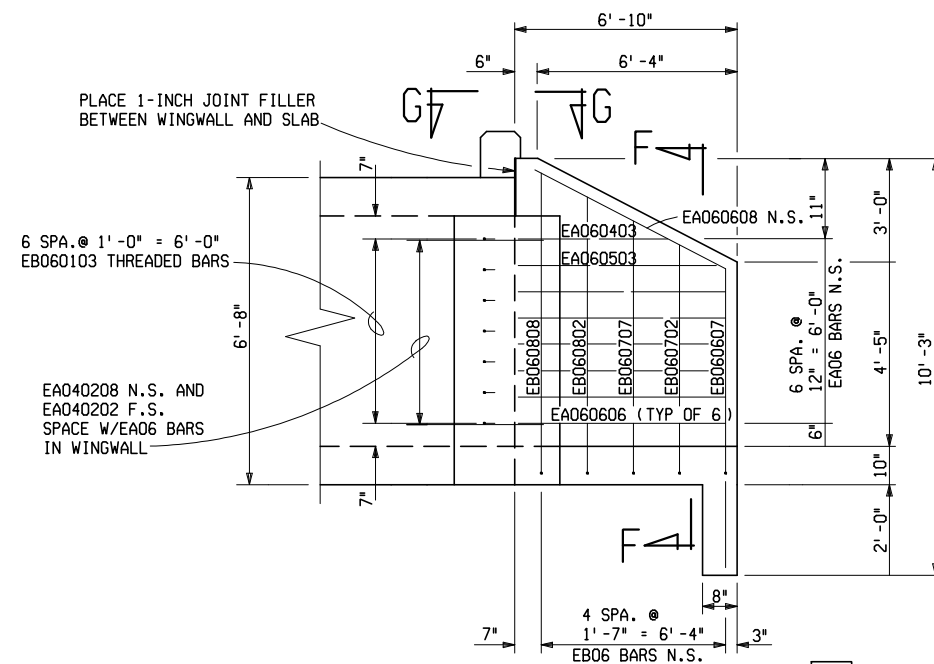
SECTION G-G

NOT TO SCALE  
DETAIL SHOWING CONNECTING COLLAR STEEL  
NOTE: COLLAR IS POUR A



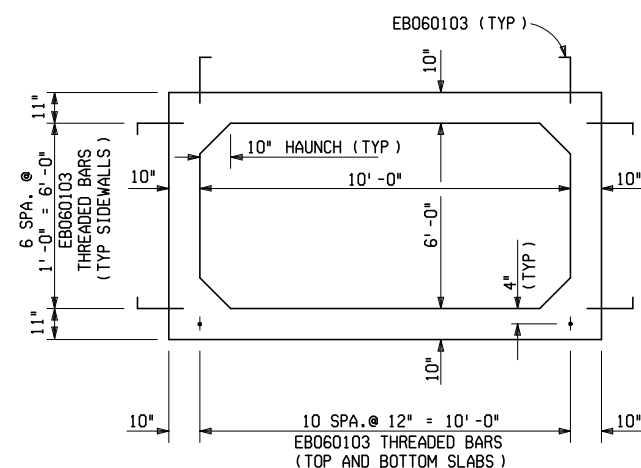
SECTION D-D

NOT TO SCALE



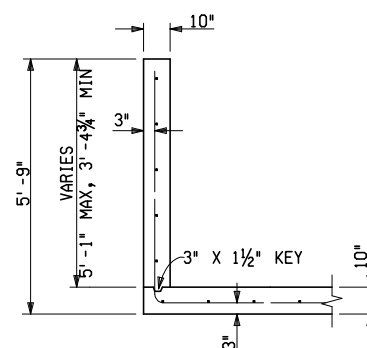
SECTION C-C

NOT TO SCALE



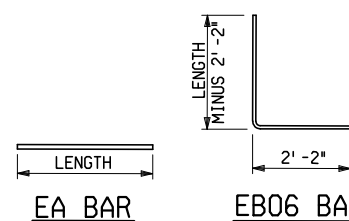
SECTION E-E

NOT TO SCALE  
SHOWING INSERT LOCATIONS FOR 3/4" THREADED BARS (EB060103).  
INSERTS FOR 3/4" THREADED BARS SHALL BE FABRICATOR INSTALLED;  
AND ARE INCLUDED IN THE BID ITEM "Culv, Precast Conc Box,  
10 foot by 6 foot."

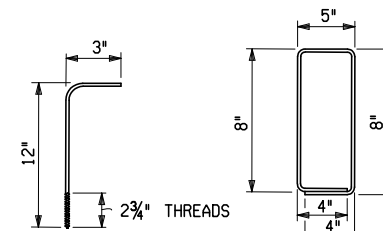


SECTION F 

NOT TO SCALE

EA BAR

EB06 BAR



EB060103

THREADED BAR  
INCLUDED IN BID ITEM  
"Reinforcement, Steel,  
Epoxy Coated."

EKO40205

10' X 6' BOX CULVERT DETAILS 18-3

REINFORCEMENT, STEEL ONE END ONLY			
HEADWALL	BAR	NO. REQ'D	TOTAL WEIGHT
	EA041102	4	29.8
	EK040205	8	12.9
	EB060103	11	20.7
COLLAR	EA060507	8	67.1
	EA040202	16	23.2
	EA040208	16	28.5
	EB060103	14	26.3
APRON	EB060103	11	20.7
	EA061109	1	17.6
	EA061301	1	19.7
	EA061405	1	21.7
	EA061509	1	23.7
	EA061701	2	51.3
	EA060206	2	7.5
WINGWALLS	EA060306	2	10.5
	EA060404	15	97.6
	EA060606	2	19.5
	EA060608	2	20.0
	EA060403	2	12.8
	EA060503	2	15.8
	EA060606	12	117.2
	EB060808	2	26.0
	EB060802	2	24.5
	EB060707	2	22.8
EB060702	2	21.5	
EB060607	2	19.8	
TOTAL		779	Lbs

ALL REINFORCEMENT STEEL  
SHALL BE EPOXY COATED.

CONCRETE-GRADE S2 QUANTITIES		
LOCATION	POUR	ONE END ONLY
COLLARS	A	1.0
HEADWALL	B	0.4
APRON	C	2.4
WINGWALLS	D	2.4
CURTAINWALL	E	1.5
TOTAL ONE END		8 Cud

ALPHABETICAL POUR DESIGNATION IS NOT  
TO BE CONSTRUED AS A POUR SEQUENCE.